



SEQUENCE LISTING

<110> Shyjan, Andrew W.

<120> COMPOSITIONS AND METHODS FOR THE DIAGNOSIS, PREVENTION AND TREATMENT OF TUMOR PROGRESSION

<130> 07334/004002

<140> US 08/862,442

<141> 1997-05-23

<150> US 08/623,679

<151> 1996-03-29

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<213> Mus musculus

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ctaacagatg ttgctgtgg	cagctcacta accagcacat	cccccccttg	ccgagtgggg	180
ctcccagcac aacaggagag	gacaccaagc aggacacac	gcagtccggg	aatatgtctg	240
tcagcaaaca caccagagc	tacccaacag actcctatgg	gattcttcaa	ttccagggtg	300
ggggttactc caataaagcc	atg tac atc cga gtc tcc tac gac acc aag cca			353
	Met Tyr Ile Arg Val Ser Tyr Asp Thr Lys Pro			
1	5	10		

gat tcc ctg ctc cac ctc atg gtg aag gac tgg cag ctg gag ctc ccg		401
Asp Ser Leu Leu His Leu Met Val Lys Asp Trp Gln Leu Glu Leu Pro		
15	20	25

aag ctc ttg ata tct gtg cac gga ggc ctc caa agc ttc gag atg cag		449
Lys Leu Leu Ile Ser Val His Gly Gly Leu Gln Ser Phe Glu Met Gln		
30	35	40

tcc aaa ctg aag cag gtg ttt ggg aaa ggt ctg atc aag gct gcc atg		497
Ser Lys Leu Lys Gln Val Phe Gly Lys Gly Leu Ile Lys Ala Ala Met		
45	50	55

acc acg ggg gcg tgg atc ttc acc ggg ggt gtg agc act ggt gtc gtc 545  
 Thr Thr Gly Ala Trp Ile Phe Thr Gly Gly Val Ser Thr Gly Val Val  
 60 65 70 75  
 agc cat gtg ggg gat gcc ttg aaa gac cac tcc tcc aag tcc aga ggc 593  
 Ser His Val Gly Asp Ala Leu Lys Asp His Ser Ser Lys Ser Arg Gly  
 80 85 90  
 cggtc tgt gct ata gga att gct ccc tgg ggc atg gtg gag aac aag 641  
 Arg Leu Cys Ala Ile Gly Ile Ala Pro Trp Gly Met Val Glu Asn Lys  
 95 100 105  
 gaa gac ctg att gga aaa gat gta aca aga gtc tat cag acc atg tcc 689  
 Glu Asp Leu Ile Gly Lys Asp Val Thr Arg Val Tyr Gln Thr Met Ser  
 110 115 120  
 aac cct ctg agc aag ctc tct gtg ctc aac aat tcc cac act cac ttc 737  
 Asn Pro Leu Ser Lys Leu Ser Val Leu Asn Asn Ser His Thr His Phe  
 125 130 135  
 atc ttg gct gac aac ggc acc ctg ggc aag tat ggt gct gag gtg aag 785  
 Ile Leu Ala Asp Asn Gly Thr Leu Gly Lys Tyr Gly Ala Glu Val Lys  
 140 145 150 155  
 ctt cga aga cag ctg gaa aaa cac atc tcc ctg cag aag atc aac aca 833  
 Leu Arg Arg Gln Leu Glu Lys His Ile Ser Leu Gln Lys Ile Asn Thr  
 160 165 170  
 agg ctg ggc cag ggt gta cct gtc gtg ggc cta gtg gta gaa ggt ggt 881  
 Arg Leu Gly Gln Gly Val Pro Val Val Gly Leu Val Val Glu Gly Gly  
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 Pro Asn Val Val Ser Ile Val Leu Glu Tyr Leu Lys Glu Asp Pro Pro  
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 Val Pro Val Val Val Cys Asp Gly Ser Gly Arg Ala Ser Asp Ile Leu  
 205 210 215  
 tcc ttc gca cac aaa tac tgc gac gaa gga gga gtc ata aac gag tcc 1025  
 Ser Phe Ala His Lys Tyr Cys Asp Glu Gly Val Ile Asn Glu Ser  
 220 225 230 235  
 ctg cgg gac cag ctt cta gtt acc att cag aaa aca ttt aat tac agc 1073  
 Leu Arg Asp Gln Leu Leu Val Thr Ile Gln Lys Thr Phe Asn Tyr Ser  
 240 245 250  
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 Lys Ser Gln Ser Tyr Gln Leu Phe Ala Ile Ile Met Glu Cys Met Lys  
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D1

tca gct cca gat cag ctg agc ttg gcc ctg gct tgg aac cgg gtc gac Ser Ala Pro Asp Gln Leu Ser Leu Ala Leu Ala Trp Asn Arg Val Asp 300 305 310 315	1265
ata gcg cga agc cag atc ttc gtc ttt ggc cca cac tgg ccg cca ctg Ile Ala Arg Ser Gln Ile Phe Val Phe Gly Pro His Trp Pro Pro Leu 320 325 330	1313
gga agc ctg gcc cct cct gtg gac acc aaa gcc gca gag aag gaa aag Gly Ser Leu Ala Pro Pro Val Asp Thr Lys Ala Ala Glu Lys Glu Lys 335 340 345	1361
aag cca ccc aca gcc acc acc aag ggg aga gga aaa gga aaa ggc aag Lys Pro Pro Thr Ala Thr Lys Gly Arg Gly Lys Gly Lys Gly Lys 350 355 360	1409
aag aaa ggc aaa gtg aaa gag gaa gtg gag gaa gag acg gac ccc cgg Lys Lys Gly Lys Val Lys Glu Glu Val Glu Glu Thr Asp Pro Arg 365 370 375	1457
aag ctt gag ctg ctc aac tgg gtg aat gcc ctg gag caa gcc atg ctg Lys Leu Glu Leu Leu Asn Trp Val Asn Ala Leu Glu Gln Ala Met Leu 380 385 390 395	1505
gat gct ctt gtc cta gat cgg gtg gac ttt gta aag ctc ctg att gaa Asp Ala Leu Val Leu Asp Arg Val Asp Phe Val Lys Leu Leu Ile Glu 400 405 410	1553
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cta tac aac acc aga ctg ggc cca cca aac acc ctt cat ctg ctg gtg Leu Tyr Asn Thr Arg Leu Gly Pro Pro Asn Thr Leu His Leu Leu Val 430 435 440	1649
cg <sup>g</sup> gat gta aag aag agc aac ctt cca cct gat tac cac atc agc ctc Arg Asp Val Lys Lys Ser Asn Leu Pro Pro Asp Tyr His Ile Ser Leu 445 450 455	1697
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tgc aac tac act cgg aaa agc ttc cgg act ctc tac aac aac ttg ttt Cys Asn Tyr Thr Arg Lys Ser Phe Arg Thr Leu Tyr Asn Asn Leu Phe 480 485 490	1793
ggc cct aag agg gta gag ctc agc aga cac aca gtg tcc tgt gcc tcc Gly Pro Lys Arg Val Glu Leu Ser Arg His Thr Val Ser Cys Ala Ser 495 500 505	1841
cag agt aac atg tgg ttc ctt gat gtg ctt ccc caa aag ccc acc tgt Gln Ser Asn Met Trp Phe Leu Asp Val Leu Pro Gln Lys Pro Thr Cys 510 515 520	1889
gca gaa tgc aac tct tca cct cac ctg tcc caa act gac atc acc cca Ala Glu Cys Asn Ser Ser Pro His Leu Ser Gln Thr Asp Ile Thr Pro 525 530 535	1937

cct ctg ccc tgacacccag tgcagggcct cctagcttc acatgcagcc  
Pro Leu Pro  
540

1986

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Val His Gly Gly Leu Gln Ser Phe Glu Met Gln Ser Lys Leu Lys Gln  
35 40 45  
Val Phe Gly Lys Gly Leu Ile Lys Ala Ala Met Thr Thr Gly Ala Trp  
50 55 60  
Ile Phe Thr Gly Gly Val Ser Thr Gly Val Val Ser His Val Gly Asp  
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Ala Leu Lys Asp His Ser Ser Lys Ser Arg Gly Arg Leu Cys Ala Ile  
85 90 95  
Gly Ile Ala Pro Trp Gly Met Val Glu Asn Lys Glu Asp Leu Ile Gly  
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Lys Asp Val Thr Arg Val Tyr Gln Thr Met Ser Asn Pro Leu Ser Lys  
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Leu Ser Val Leu Asn Asn Ser His Thr His Phe Ile Leu Ala Asp Asn  
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Gly Thr Leu Gly Lys Tyr Gly Ala Glu Val Lys Leu Arg Arg Gln Leu  
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Glu Lys His Ile Ser Leu Gln Lys Ile Asn Thr Arg Leu Gly Gln Gly  
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Cys Asp Gly Ser Gly Arg Ala Ser Asp Ile Leu Ser Phe Ala His Lys  
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Tyr Cys Asp Glu Gly Gly Val Ile Asn Glu Ser Leu Arg Asp Gln Leu  
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Leu Val Thr Ile Gln Lys Thr Phe Asn Tyr Ser Lys Ser Gln Ser Tyr  
245 250 255  
Gln Leu Phe Ala Ile Ile Met Glu Cys Met Lys Lys Glu Leu Val  
260 265 270  
Thr Val Phe Arg Met Gly Ser Glu Gly Gln Gln Asp Val Glu Met Ala  
275 280 285  
Ile Leu Thr Ala Leu Leu Lys Gly Thr Asn Ala Ser Ala Pro Asp Gln  
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Leu Ser Leu Ala Leu Ala Trp Asn Arg Val Asp Ile Ala Arg Ser Gln  
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 Thr Thr Lys Gly Arg Gly Lys Gly Lys Lys Lys Gly Lys Val  
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 Gln His Phe Leu Thr Ile Pro Arg Leu Glu Glu Leu Tyr Asn Thr Arg  
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 Ser Asn Leu Pro Pro Asp Tyr His Ile Ser Leu Ile Asp Ile Gly Leu  
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 Val Leu Glu Tyr Leu Met Gly Gly Ala Tyr Arg Cys Asn Tyr Thr Arg  
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 Lys Ser Phe Arg Thr Leu Tyr Asn Asn Leu Phe Gly Pro Lys Arg Val  
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 Glu Leu Ser Arg His Thr Val Ser Cys Ala Ser Gln Ser Asn Met Trp  
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Val Ser Tyr Asp Thr Lys Pro Asp Ser Leu Leu His Leu Met Val Lys	
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Asp Trp Gln Leu Glu Leu Pro Lys Leu Leu Ile Ser Val His Gly Gly	
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Gly Val Ser Thr Gly Val Ile Ser His Val Gly Asp Ala Leu Lys Asp	
70 75 80	
cac tcc tcc aag tcc aga ggc cgg gtt tgt gct ata gga att gct cca	645
His Ser Ser Lys Ser Arg Gly Arg Val Cys Ala Ile Gly Ile Ala Pro	
85 90 95 100	
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Trp Gly Ile Val Glu Asn Lys Glu Asp Leu Val Gly Lys Asp Val Thr	
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aga gtg tac cag acc atg tcc aac cct cta agt aag ctc tct gtg ctc	741
Arg Val Tyr Gln Thr Met Ser Asn Pro Leu Ser Lys Leu Ser Val Leu	
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Asn Asn Ser His Thr His Phe Ile Leu Ala Asp Asn Gly Thr Leu Gly	
135 140 145	
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Lys Tyr Gly Ala Glu Val Lys Leu Arg Arg Leu Leu Glu Lys His Ile	
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Ser Leu Gln Lys Ile Asn Thr Arg Leu Gly Gln Gly Val Pro Leu Val	
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ggt ctc gtg gtg gag ggg ggc cct aac gtg gtg tcc atc gtc ttg gaa	933
Gly Leu Val Val Glu Gly Gly Pro Asn Val Val Ser Ile Val Leu Glu	
185 190 195	
tac ctg caa gaa gag cct ccc atc cct gtg gtg att tgt gat ggc agc	981
Tyr Leu Gln Glu Glu Pro Pro Ile Pro Val Val Ile Cys Asp Gly Ser	
200 205 210	

D

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cag aaa aca ttt aat tat aat aag gca caa tca cat cag ctg ttt gca Gln Lys Thr Phe Asn Tyr Asn Lys Ala Gln Ser His Gln Leu Phe Ala 245 250 255 260	1125
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gga aga gga aaa ggg aaa ggc aag aag aaa ggg aaa gtg aaa gag gaa Gly Arg Gly Lys Gly Lys Gly Lys Lys Gly Lys Val Lys Glu Glu 360 365 370	1461
gtg gag gaa act gac ccc cgg aag ata gag ctg ctg aac tgg gtg Val Glu Glu Thr Asp Pro Arg Lys Ile Glu Leu Leu Asn Trp Val 375 380 385	1509
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ctg acc att ccg agg ctg gag gag ctt tat aac aca aga ctg ggt cca Leu Thr Ile Pro Arg Leu Glu Leu Tyr Asn Thr Arg Leu Gly Pro 425 430 435	1653
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aaa aaa aaa aag aaa aag gag gaa gag atc gac att gat gtg gac gac Lys Lys Lys Lys Lys Glu Glu Glu Ile Asp Ile Asp Val Asp Asp 520 525 530	1941
cct gcc gtg agt cgg ttc cag tat ccc ttc cac gag ctg atg gtg tgg Pro Ala Val Ser Arg Phe Gln Tyr Pro Phe His Glu Leu Met Val Trp 535 540 545	1989
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gcc atg gcc cac gag tcc tcc gag agt gat ctg gtg gat gac atc tcc Ala Met Ala His Glu Ser Ser Glu Ser Asp Leu Val Asp Asp Ile Ser 585 590 595	2133
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tta tta gac cag tcc tat aag cat gac gag cag atc gct atg aaa ctc Leu Leu Asp Gln Ser Tyr Lys His Asp Glu Gln Ile Ala Met Lys Leu 615 620 625	2229
ctg acc tac gag ctg aaa aac tgg agc aac tcg acc tgc ctc aaa ctg Leu Thr Tyr Glu Leu Lys Asn Trp Ser Asn Ser Thr Cys Leu Lys Leu 630 635 640	2277
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D |

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gca gat gct ggc tca aga aag ggg gat gag gag aac gag cat aaa aaa Ala Asp Ala Gly Ser Arg Lys Gly Asp Glu Glu Asn Glu His Lys Lys 725 730 735 740	2565
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ccc att gtc aag ttc tgg ttt tac aca ata tca tac ttg ggc tac ctg Pro Ile Val Lys Phe Trp Phe Tyr Thr Ile Ser Tyr Leu Gly Tyr Leu 760 765 770	2661
ctg ctg ttt aac tac gtc atc ctg gtg cggt atg gat ggc tgg ccg tcc Leu Leu Phe Asn Tyr Val Ile Leu Val Arg Met Asp Gly Trp Pro Ser 775 780 785	2709
ctc cag gag tgg atc gtc atc tcc tac atc gtg agc ctg gcg tta gag Leu Gln Glu Trp Ile Val Ile Ser Tyr Ile Val Ser Leu Ala Leu Glu 790 795 800	2757
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att gga aag atg atg atc gac atg ctg tac ttt gtg gtc atc atg ctg Ile Gly Lys Met Met Ile Asp Met Leu Tyr Phe Val Val Ile Met Leu 855 860 865	2949
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gag gag aag ccc tct tgg aaa ctg gcc cga aac atc ttc tac atg ccc Glu Glu Lys Pro Ser Trp Lys Leu Ala Arg Asn Ile Phe Tyr Met Pro 885 890 895 900	3045
tac tgg atg atc tat gga gag gtg ttt gca gac cag ata gac ctc tac Tyr Trp Met Ile Tyr Gly Glu Val Phe Ala Asp Gln Ile Asp Leu Tyr 905 910 915	3093
gcc atg gaa att aat cct cct tgt ggt gag aac cta tat gat gag gag Ala Met Glu Ile Asn Pro Pro Cys Gly Glu Asn Leu Tyr Asp Glu Glu 920 925 930	3141

D

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 50 55 60  
 Ile Phe Thr Gly Gly Val Ser Thr Gly Val Ile Ser His Val Gly Asp  
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 Ala Leu Lys Asp His Ser Ser Lys Ser Arg Gly Arg Val Cys Ala Ile  
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 Gly Thr Leu Gly Lys Tyr Gly Ala Glu Val Lys Leu Arg Arg Leu Leu  
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 Glu Lys His Ile Ser Leu Gln Lys Ile Asn Thr Arg Leu Gly Gln Gly  
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 Val Pro Leu Val Gly Leu Val Val Glu Gly Gly Pro Asn Val Val Ser  
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 Ile Val Leu Glu Tyr Leu Gln Glu Pro Pro Ile Pro Val Val Ile  
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 Cys Asp Gly Ser Gly Arg Ala Ser Asp Ile Leu Ser Phe Ala His Lys  
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D

Tyr Cys Glu Glu Gly Gly Ile Ile Asn Glu Ser Leu Arg Glu Gln Leu  
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 Lys Leu Tyr Lys Ala Met Ala His Glu Ser Ser Glu Ser Asp Leu Val  
 580 585 590  
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 595 600 605  
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 Phe Tyr Asn Ala Pro Ile Val Lys Phe Trp Phe Tyr Thr Ile Ser Tyr  
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 Gly Trp Pro Ser Leu Gln Glu Trp Ile Val Ile Ser Tyr Ile Val Ser  
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 Leu Ala Leu Glu Lys Ile Arg Glu Ile Leu Met Ser Glu Pro Gly Lys  
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 Asp Leu Val Ala Ile Ser Thr Phe Met Ile Gly Ala Met Ala Thr Arg  
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 Ser Val Met Met Ile Gly Lys Met Met Ile Asp Met Leu Tyr Phe Val  
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 Lys Glu Glu Lys Asp Val Lys Thr His Leu Val Pro Glu Cys Gln Asn  
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 Thr Asp Ile Pro Tyr Ile Val Ser Glu Ala Ala Val Gln Ala Glu Gln  
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 Lys Asp Val Thr Arg Val Tyr Gln Thr Met Ser Asn Pro Leu Ser Lys  
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